AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of producing sub-critical water decomposition products, comprising:

continuously supplying material to be processed into a reactor through an inlet provided for the reactor, whose interior is kept at a sub-critical condition for water; and

continuously taking out a liquid containing a decomposition product through ~~one or~~ any one of a plurality of outlets provided at a different position from ~~the~~ a position where the inlet of the reactor is provided, to adjust residence time of the liquid containing the decomposition product in the reactor.

2. (Currently Amended) A method of producing sub-critical water decomposition products, comprising:

continuously supplying material to be processed into a reactor through an inlet provided for the reactor, whose interior is kept at a sub-critical condition for water;

continuously taking out a liquid containing a decomposition product through ~~one or~~ any one of a plurality of outlets provided at a different position from ~~the~~ a position where the inlet of the reactor is provided, to form desired steady concentration profiles of the decomposition product in the reactor; and

taking out the desired decomposition product through~~, among the one or plurality of outlets, one or more outlet(s) provided at~~ at least one of the outlets, the at least one of the outlets being provided at a position where the concentration of the desired decomposition product is high.

3. (Currently Amended) A method of producing sub-critical water decomposition products, comprising:

continuously supplying material to be processed that contains solid matter having a slow decomposition rate with sub-critical water and a different specific gravity from that of the sub-critical water, into a vertical-type reactor whose interior is kept at sub-critical conditions for water, through an inlet provided for the reactor;

selecting an outlet ~~adjusting, with one or a plurality of outlets provided at a position~~

~~different in height from where the inlet is provided for the reactor, an outlet position~~ from which a liquid containing a decomposition product is let out and adjusting an outlet amount thereof, to make a steady flow in the sub-critical water in a steady state with a plurality of outlets provided at a position different in height from where the inlet is provided for the reactor, the steady flow flowing in an opposite direction to ~~the~~ a direction in which the solid matter sinks or floats up and being slower than ~~the~~ a sinking velocity or floating velocity of the solid matter;

forming in the steady flow, in the following order from ~~the~~ upstream of the flow, at least a fluidized bed in which the solid matter is decomposed into fine particles by the sub-critical water and the fine particles fluidize in the flow, and a sub-critical water dissolution part in which the material to be processed is turned into further finer particles or completely turned into a soluble material to flow with the sub-critical water;

further forming, depending on ~~the~~ a type of the material to be processed, a fixed bed in which solid matter stays in a fixed location even with the flow, the fixed bed being formed upstream of the fluidized bed; and

taking out the liquid containing a desired decomposition product from the sub-critical water dissolution part from the reactor, using ~~one(s) of the one or plurality of~~ at least one of the outlets.

4. (Currently Amended) A method of producing sub-critical water decomposition products, comprising:

~~causing a mixture of material to be processed containing a solid matter and sub-critical water~~ supplying a mixture including an object containing solid matter and subcritical water into a reaction container through a same inlet and causing the mixture to flow in sub-critical water in a steady state in an opposite direction to ~~the~~ a direction in which the solid matter flows;

forming in the flow, in the following order from ~~the~~ upstream of the flow, at least a fluidized bed in which the solid matter is decomposed into fine particles by the sub-critical water and the fine particles fluidize in the flow, and a sub-critical water dissolution part in which the material to be processed is turned into further finer particles or completely turned into a soluble material to flow with the sub-critical water;

further forming, depending on ~~the~~ a type of the material to be processed, a fixed bed in

which solid matter stays in a fixed location even with the flow, the fixed bed being formed upstream of the fluidized bed; and

adjusting ~~the~~ a distance through which the sub-critical water dissolution part flows to vary ~~the~~ a residence time of the solid matter and ~~the~~ a residence time of the sub-critical water from each other and to adjust ~~the~~ a degree of decomposition of the components of the material to be processed that have been made soluble to the sub-critical water, whereby a target decomposition treatment product is obtained.

5. (Currently Amended) The method according to claim 4, wherein the solid matter sinks in the mixture being in a steady state, and the flow of the mixture is in an opposite direction to ~~the~~ that of a gravitational force.

6. (Currently Amended) The method according to claim 4, wherein the solid matter floats about in the mixture in a steady state, and the flow of the mixture is in a direction of ~~the~~ a gravitational force.

7. (Currently Amended) The method according to claim 4, wherein, in the mixture in a steady state, ~~the~~ a flow rate of the mixture is less than ~~the~~ a sinking velocity or ~~the~~ a floating velocity of the mixture.

8. (Currently Amended) The method according to claim 4, wherein the mixture is slurry.

9. (Currently Amended) The method according to claim 1, wherein ~~the~~ a reaction temperature of the sub-critical water decomposition is within a range of from 130°C to 374°C, and ~~the~~ a reaction pressure is in a range equal to or higher than ~~the~~ a saturated water vapor pressure at the reaction temperature.

10. (Previously Presented) The method according to claim 1, wherein the material to

be processed is at least one material selected from food, livestock products, agricultural products, marine products, wood, natural organic matter, plastics, chlorinated organic compounds, rubber, fiber, and wastes thereof, as well as sewage treatment wastes and wastewater treatment wastes.

11. (Currently Amended) An apparatus for sub-critical water decomposition treatment, comprising:

a reactor configured to decompose material to be processed using sub-critical water;

heating means for heating a mixture composed of water and the to be processed material to form and keep sub-critical conditions for water; ~~and~~

compressing means for compressing the mixture;

introducing means for introducing the material to be processed into the reactor;

an inlet ~~for introducing~~ through which the material to be processed is to be introduced into ~~to~~ the reactor; and

an outlet for letting out a mixture of a decomposition product and water from the reactor, ~~characterized in that:~~ wherein the outlet is provided at ~~a position or~~ at least one of a plurality of positions different from ~~the~~ a position where the inlet is provided, so that the outlet can take up a plurality of positions.

12. (Currently Amended) An apparatus for sub-critical water decomposition treatment, comprising:

a vertical-type reactor configured to decompose material to be processed with sub-critical water;

heating means for heating a mixture of water and the material to be processed and compressing means for compressing the mixture, so as to form and keep a sub-critical condition for water;

introducing means for introducing the material to be processed into the reactor;

an inlet ~~for introducing~~ through which the material to be processed is to be introduced into the reactor; and

an outlet for letting out a mixture of water and a decomposition product from the reactor, ~~characterized in that~~ wherein:

the reactor is arranged substantially vertically;

the inlet is provided for at least one of a top end portion or a bottom end portion of the reactor; and

the introduced mixture of the material to be processed and the sub-critical water is caused to flow, in the sub-critical water in a steady state, in an opposite direction to ~~the~~ a direction in which the solid matter travels, so as to form in the flow, in the following order from ~~the~~ upstream of the flow, at least a fluidized bed in which the solid matter is decomposed into fine particles with the sub-critical water and the fine particles fluidize in the flow, and a sub-critical water dissolution part in which the material to be processed is turned into further finer particles or completely into a soluble material to flow with the sub-critical water, and to further form, depending on the material to be processed, a fixed bed in which solid matter stays in a fixed position even with the flow, the fixed bed being formed upstream of the fluidized bed, and wherein ~~the~~ a position of the outlet is adjustable so as to let out the sub-critical water dissolution part and adjust ~~the~~ a distance through which the sub-critical water dissolution part flows.

13. (Original) The apparatus for sub-critical water decomposition treatment according to claim 12, wherein the outlet is formed at a plurality of positions on a sidewall of the reactor along the flow direction.

14. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, wherein the outlet is~~. [sic.]~~ a movable outlet that is continuously movable along the flow direction.

15. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, ~~characterized in that~~ wherein the vertical-type reactor is provided with monitoring means through which the interior is visualized.

16. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, ~~characterized in that~~ wherein:

the vertical-type reactor is a cylindrical vessel;

the inlet is circular; and

~~the~~ an inner diameter of the inlet is within a range of from 1/5 times to 1/15 times ~~the~~ an inner diameter of the vertical-type cylindrical vessel.

17. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, ~~characterized in that~~ wherein the apparatus comprises a plurality of the vertical-type reactors.

18. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, ~~characterized in that~~ wherein:

the apparatus further comprises a tubular reactor for secondary reaction joined to the outlet of the reactor; and

~~the~~ an inner diameter of the tubular reactor for secondary reaction is within a range of 1 to 1/5 times ~~the~~ an inner diameter of the vertical-type cylindrical tubular vessel.

19. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim ~~12~~ 18, ~~characterized in that~~ wherein:

a plurality of the tubular reactors for secondary reaction are provided; and

the tubular reactors for secondary reaction are connected in series and/or parallel with one another.

20. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 18, ~~characterized in that~~ wherein the apparatus further comprises heating and cooling means for controlling ~~the~~ a reaction temperature in the tubular reactor for secondary reaction.

21. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 12, ~~characterized in that~~ wherein:

the vertical-type reactor is provided with a back-pressure valve; and

~~the~~ a reaction pressure in the vertical-type reactor is controlled using the back-pressure

valve.

22. (Currently Amended) The apparatus for sub-critical water decomposition treatment according to claim 21, ~~characterized in that~~ wherein a cooling pipe is provided immediately before the back-pressure valve.

23. (Currently Amended) The method according to claim 2, wherein ~~the~~ a reaction temperature of the sub-critical water decomposition is within a range of from 130°C to 374°C, and ~~the~~ a reaction pressure is in a range equal to or higher than ~~the~~ a saturated water vapor pressure at the reaction temperature.

24. (Currently Amended) The method according to claim 3, wherein ~~the~~ a reaction temperature of the sub-critical water decomposition is within a range of from 130°C to 374°C, and ~~the~~ a reaction pressure is in a range equal to or higher than ~~the~~ a saturated water vapor pressure at the reaction temperature.

25. (Currently Amended) The method according to claim 4, wherein ~~the~~ a reaction temperature of the sub-critical water decomposition is within a range of from 130°C to 374°C, and ~~the~~ a reaction pressure is in a range equal to or higher than ~~the~~ a saturated water vapor pressure at the reaction temperature.

26. (Previously Presented) The method according to claim 2, wherein the material to be processed is at least one material selected from food, livestock products, agricultural products, marine products, wood, natural organic matter, plastics, chlorinated organic compounds, rubber, fiber, and wastes thereof, as well as sewage treatment wastes and wastewater treatment wastes.

27. (Previously Presented) The method according to claim 3, wherein the material to be processed is at least one material selected from food, livestock products, agricultural products, marine products, wood, natural organic matter, plastics, chlorinated organic compounds, rubber, fiber, and wastes thereof, as well as sewage treatment wastes and wastewater treatment wastes.

28. (Previously Presented) The method according to claim 4, wherein the material to be processed is at least one material selected from food, livestock products, agricultural products, marine products, wood, natural organic matter, plastics, chlorinated organic compounds, rubber, fiber, and wastes thereof, as well as sewage treatment wastes and wastewater treatment wastes.